Heri Purnawan

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EDUCATION

Institut Teknologi Sepuluh Nopember   Surabaya, Indonesia
Dr. in Applied Mathematics   *August 2020 – August 2024*
- Thesis title: *Disturbance Observer-based Stochastic Model Predictive Control Design for Systems with Parameter Uncertainties and Disturbances*
- Supervisor: Prof. Subchan, S.Si., M.Sc., Ph.D
- Co-Supervisors: Dr. Tahiyatul Asfihani, S.Si., M.Si.
           Prof. Seungkeun Kim, Ph.D (Aerospace Engineering, Chungnam National University)

Institut Teknologi Sepuluh Nopember   Surabaya, Indonesia
M.Si. in Applied Mathematics   *August 2016 – August 2018*
- Thesis title: *Disturbance Compensating Model Predictive Control for Warship Heading Control in Missile Firing Mission*
- Supervisors: Subchan, S.Si., M.Sc., Ph.D
           Dr. Dieky Adzkiya, S.Si., M.Si.

Institut Teknologi Sepuluh Nopember   Surabaya, Indonesia
S.Si. in Applied Mathematics   *August 2011 – August 2015*
- Thesis title: *Linear Quadratic Regulator (LQR) for Flight Stability of LSU-05*
- Supervisors: Dr. Dra. Mardlijah, MT
           Ir. Eko Budi Purwanto, MT (National Institute of Aeronautics and Space (LAPAN))

PUBLICATIONS

Journal Articles

- International

    1. **H. Purnawan**, T. Asfihani, S. Kim, and S. Subchan, "Model predictive control design under stochastic parametric uncertainties based on polynomial chaos expansions for f-16 aircraft," *Journal of Robotics and Control (JRC)*, vol. 5, no. 3, pp. 723–732, 2024.
    2. N. Ilmayasinta and **H. Purnawan**, "Optimal control in a mathematical model of smoking," *Journal of Mathematical & Fundamental Sciences*, vol. 53, no. 3, 2021.
    3. **H. Purnawan**, S. Subchan, D. Adzkiya, and T. Asfihani, "Trajectory tracking of coordinated multi-robot systems using nonlinear model predictive control," *Nonlinear Dynamics and System Theory*, vol. 21, no. 3, pp. 303–314, 2021.

- National

    1. R. A. Faroh, **H. Purnawan**, and M. M. Junaidi, "Tingkat depresi, stres, dan kecemasan mahasiswa teknik elektro selama pembelajaran daring," *Tarbiyah Wa Ta'lim: Jurnal Penelitian Pendidikan dan Pembelajaran*, vol. 10, no. 1, pp. 1–11, 2023.
    2. **H. Purnawan**, R. A. Faroh, M. H. Wahyudi, and S. Cahyaningtias, "Optimal control with treatment and water sanitation for cholera epidemic model," *EKSAKTA: Berkala Ilmiah Bidang MIPA*, vol. 23, no. 03, pp. 373–381, 2023.
    3. **H. Purnawan**, U. Ilmi, R. A. Faroh, and F. Resmi, "Moving horizon state estimation with application to autonomous vehicle," *Inprime: Indonesian Journal of Pure and Applied Mathematics*, vol. 5, no. 1, pp. 47–59, 2023.
    4. **H. Purnawan** and S. Subiono, "Barisan aritmetika bertingkat dengan menggunakan interpolasi lagrange," *Limits: Journal of Mathematics and Its Applications*, vol. 19, no. 2, pp. 145–154, 2022.

Conference Proceedings

- International

1. **H. Purnawan**, T. Asfihani, S. Kim, and S. Subchan, "Stochastic model predictive control for flight path angle tracking of f-16 aircraft based on polynomial chaos," in 2024 *International Seminar on Intelligent Technology and Its Applications (ISITIA)*, IEEE, 2024, pp. 599–604.

2. S. Subchan, L. R. Amalia, T. Asfihani, and **H. Purnawan**, "Reference tracking of quadrotor using modified nonlinear model predictive control based on nonlinear disturbance observer," in *International Conference on Mathematics: Pure, Applied and Computation*, Springer, 2023, pp. 87–104.

3. U. Ilmi and **H. Purnawan**, "Study on the problems of particle dynamics and rigid bodies (mechanical engineering field) and electrical circuits (electrical engineering)," in *Proceeding International Conference on Environment Health, Socioeconomic and Technology*, vol. 1, 2022, pp. 213–226.

4. **H. Purnawan**, T. Asfihani, and S. Subchan, "Disturbance observer model predictive control with application to uav pitch angle control," in *AIP Conference Proceedings*, AIP Publishing, vol. 2641, 2022.

5. **H. Purnawan**, U. Ilmi, R. A. Faroh, and A. B. A. A. Rizqi, "Positioning estimation of autonomous car using extended kalman filter," in *Proceeding International Conference on Environment Health, Socioeconomic and Technology*, vol. 1, 2022, pp. 96–102.

6. **H. Purnawan**, T. Asfihani, D. Adzkiya, et al., "Disturbance compensating model predictive control for warship heading control in missile firing mission," in *Journal of Physics: Conference Series*, IOP Publishing, vol. 1108, 2018, p. 012 035.

7. **H. Purnawan**, T. Asfihani, D. Adzkiya, et al., "Mathematical modeling and simulation of missile firing impact force on warship," in 2018 *International Seminar on Research of Information Technology and Intelligent Systems (ISRITI)*, IEEE, 2018, pp. 566–570.

8. T. Asfihani, D. Adzkiya, D. M. Rosyid, **H. Purnawan**, R. Kamilah, et al., "Estimation of the corvette sigma motion in missile firing mission," in 2017 *5th International Conference on Instrumentation, Control, and Automation (ICA)*, IEEE, 2017, pp. 203–207.

9. **H. Purnawan**, E. B. Purwanto, et al., "Design of linear quadratic regulator (lqr) control system for flight stability of lsu-05," in *Journal of Physics: Conference Series*, IOP Publishing, vol. 890, 2017, p. 012 056.

- National

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Research Fundings

Research for Early-Career Lecturers (PDP) 2025

Ministry of Higher Education, Science, and Technology (KEMDIKTISAINTEK) *Indonesia*

- Principal Investigator (PI)
- Research Title: Pengembangan Kalman Filter untuk Estimasi Gangguan pada Pesawat Tempur dengan Ketidakpastian Parameter dan Noise Data Sensor
  (Development of Kalman Filter for Disturbance Estimation in Fighter Aircraft with Uncertainty Parameters and Sensor Data Noise)

Experiences

Universitas Negeri Surabaya September 2025 – Present

Department of Data Science *Surabaya, Indonesia*

- Lecturer
- Research: *Data-driven for dynamical systems*

Universitas Islam Lamongan February 2022 – August 2025

Department of Electrical Engineering *Lamongan, Indonesia*

- Lecturer
- Research: *System Modelling and Control*

Indonesia College 2016 – 2018
Math Tutor *Surabaya, Indonesia*
Institut Teknologi Sepuluh Nopember 2016 – 2017
Department of Mathematics *Surabaya, Indonesia*

- Lecturer Assistant
- Calculus 1 & 2

Junior High School 1 Sugio 2015 – 2016
Mathematical Olympiad Tutor *Lamongan, Indonesia*
National Institute of Aeronautics and Space (LAPAN) 2014
Aeronautics Technology Center *Bogor, Indonesia*

- Internship Program
- Project title: *Modeling and Simulation of LAPAN Surveillance UAV (LSU)-05*

ACHIEVEMENTS

Indonesian Education Scholarship (BPI) 2023
Doctoral Study Completion *Ministry of Education, Culture, Research and Technology*
Postgraduate Scholarship for Researcher (BPUP) 2020 – 2022
Doctoral's Degree *Institut Teknologi Sepuluh Nopember*
Graduated Cumlaude 2018
Master's Degree *Institut Teknologi Sepuluh Nopember*
Fresh Graduate Scholarship 2016 – 2018
Master's Degree *Institut Teknologi Sepuluh Nopember*
Graduated Cumlaude 2015
Bachelor's Degree *Institut Teknologi Sepuluh Nopember*
Bidik Misi Scholarship 2011 – 2015
Bachelor's Degree *Ministry of Education and Culture*

TEACHING

Universitas Negeri Surabaya September 2025 – Present
Fall Semester

- 4920203003 Basic Programming, Dept. of Data Science, 2025
- 4920202030 Text Processing, Dept. of Data Science, 2025
- 4920203071 Digital Signal Processing, Dept. of Data Science, 2025
- 4920203010 Discrete Mathematics, Dept. of Data Science, 2025
- 4920203008 Matrix Algebra, Dept. of Data Science, 2025

Universitas Islam Lamongan February 2022 – August 2025
Spring Semester

- TE4485 Engineering Mathematics II, Dept. of Electrical Engineering, 2025
- TE2215 Fundamentals of Chemistry, Dept. of Electrical Engineering, 2022 – 2025
- TE1205 Fundamentals of Computer and Programming, Dept. of Electrical Engineering, 2024
- TE7251 Artificial Intelligence, Dept. of Electrical Engineering, 2022 – 2024
- IFMWP03 Linear Algebra, Dept. of Informatics Engineering, 2022

Fall Semester

- TE3233 Fundamentals of Control System, Dept. of Electrical Engineering, 2022 – 2024
- TE4249 Linear System, Dept. of Electrical Engineering, 2022 – 2024
- TE5278 Numerical Method, Dept. of Electrical Engineering, 2022 – 2024
- KL1209 Fundamentals of Calculus, Dept. of Environmental Health, 2024
- KKM24420 Ordinary Differential Equation, Dept. of Mathematics Education, 2024
- KPKK311 Engineering Mathematics/Calculus, Dept. of Civil Engineering, 2022 – 2023

Skills & Research Interests

Skills

- Languages: *Indonesia, English*
- Coding: *Matlab, C, C++, Python*
- Misc.: *Training, consultation, LATEX typesetting*

Research Interests

- Differential Equation
- Numerical Analysis
- Optimization
- Estimation
- Optimal Control
- Model Predictive Control
- System Identification
- Uncertainty Quantification

References

Prof. Subchan   Professor

Department of Mathematics, Institut Teknologi Sepuluh Nopember   *Surabaya, Indonesia*

- Address: Building F, 2nd Floor, ITS Campus, Keputih, Sukolilo-Surabaya 60111
- E-mail: subchan@its.ac.id

Dr. Dieky Adzkiya   Assistant Professor

Department of Mathematics, Institut Teknologi Sepuluh Nopember   *Surabaya, Indonesia*

- Address: Building F, 2nd Floor, ITS Campus, Keputih, Sukolilo-Surabaya 60111
- E-mail: dieky@its.ac.id

Prof. Mardlijah   Professor

Department of Mathematics, Institut Teknologi Sepuluh Nopember   *Surabaya, Indonesia*

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